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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,981	05/16/2005	Kazunobu Itonaga	245402011300	1803
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EXAMINER				
JANG, CHRISTIAN YONGKYUN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/534,981

Applicant(s)

ITONAGA ET AL.

Examiner

Christian Y. Jang

Art Unit

4153

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 15 and 20-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10, 12-14 and 16-29 is/are rejected.
- 7) ☒ Claim(s) 5, 9, and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 05/16/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is responsive to preliminary amendment filed on 08/01/2005. Claims 1-29 are pending. Claims 15, 20-29 have been canceled.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file

Specification

3. The disclosure is objected to because of the following informalities: In the last paragraph of page 38, and extending into page 39, the base and cap portions point to incorrect elements on the figures.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 7, 10, 12, 16, and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Harada et al (US Patent #5,179,956).

6. Regarding Claim 1, Harada teaches a pulse wave measuring apparatus for measuring a pulse wave when pressed against a living body, comprising:

a substrate having a pressure sensor on a main surface (Harada, Fig 3, element 60); and

a protection member having an accommodation space accommodating said substrate (Fig 3, element 62 which is integrally connected to element 50);

wherein said protection member is formed of a conductive material (Column 4, lines 59-60, "the protection plate is formed of metal), and a wall surface of said protection member forming said accommodation space is arranged such that an air chamber is -interposed between said wall surface and an end surface of said substrate (Column 4, lines 59-60, "protection plate ... adhered to head case", Column 5, lines 8-15, "through holes ... provide an air passage for applying atmospheric pressure to a surface of the chip). Although the air chamber, as taught by Harada, lie between the head case (Fig 3, element 50) and the substrate (Fig 3, element 60), the examiner notes that the protection member is integrally connected to the head case for the purpose of "protecting the conductor pattern," and as such the head case can be considered part of the overall protection member. In addition, noting that applicant's invention points to all the elements outside the sensor and supporting member that lends to the structure of the device as the protection member, the same can thus be applied to the prior art.

7. Regarding Claim 3, Harada teaches the pulse wave measuring apparatus according to claim 1, wherein said air chamber is open to atmosphere (Column 5, lines 8-15, "through holes ... provide an air passage for applying atmospheric pressure to a surface of the chip).

8. Regarding Claim 7, Harada teaches the pulse wave measuring apparatus according to claim 1, further comprising a protection film covering said main surface of said substrate and said air chamber (Fig 3, elements 92, 90, and 94), and
an attachment mechanism configured for fastening a peripheral portion of said protection film to an outer circumferential wall of said protection member for attachment. In Harada's teachings the protective film is simply applied unto the outer circumferential wall, which is one mechanism of attachment (Column 6, lines 29-30, layer applied to an outer surface of the protection plate).

9. Regarding Claim 10, Harada teaches the pulse wave measuring apparatus according to claim 7, wherein said protection film and said attachment mechanism are integrally formed (Column 6, lines 29-30, layer applied to an outer surface of the protection plate).

10. Regarding Claim 12, Harada teaches the pulse wave apparatus according to claim 1,

wherein said protection member includes an inner frame body containing said accommodation space (Fig 3, the combination of elements 56, 58, and 60) and an outer frame body fitted to said inner frame body so as to enclose an outer wall of said inner frame body (Fig 3, combination of elements 50 and 62),

said outer frame body has a protection film portion covering said main surface of said substrate and said air chamber (Fig 3, combination of elements 92, 90, and 94) ,
and

an outer circumferential wall of said outer frame body has a projected portion on its entire circumference (Fig 3, bottom right portion of element 94).

11. Regarding Claim 16, Harada teaches the pulse wave apparatus according to claim 1, wherein said protection member is electrically connected to a ground potential (Column 7, lines 25-27, the protection plate is grounded through the grounding terminals of the second connection terminals).

12. Regarding Claim 18, Harada teaches the pulse wave measuring apparatus according to claim 1, wherein said protection member is formed of a metal (Column 4, lines 59-60, "the protection plate is formed of metal) or a ceramic material (Column 4, lines 48, plate member ... formed of ceramics).

13. Regarding Claim 19, Harada teaches the pulse wave apparatus according to claim 1, wherein said protection member has a plurality of small irregularities on its

surface. Although Harada never explicitly states irregularities on its protection member, it does not mention the member being polished or made to be perfectly smooth. Thus, there is bound to be "a plurality of small irregularities" on its surface. Since applicant has not claimed any structural limitations to these "small irregularities," examiner notes that irregularity of structure even at the molecular scale is within the scope of this claim. Thus the claim is rejected.

14. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Narimatsu et al (US Patent #5,467,771).

15. Regarding Claim 1, Narimatsu teaches a pulse wave measuring apparatus for measuring a pulse wave when pressed against a living body (Fig 3, element 10), comprising:

- a substrate having a pressure sensor on a main surface (Fig 3, element 48); and
- a protection member having an accommodation space accommodating said substrate (Fig 3, elements 50 and 38);

- wherein said protection member is formed of a conductive material (Column 4, line 3-4, protection plate is formed of a metal) and a wall surface of said protection member forming said accommodation space is arranged such that an air chamber is interposed between said wall surface and an end surface of said substrate (Fig 3, elements 64, 66, 68, and 52).

16. Regarding Claim 2, Narimatsu teaches the pulse wave measuring apparatus according to claim 1, wherein said air chamber is provided around an entire perimeter of said substrate (Fig 3 and 4, element 52).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 4, 6, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al (US Patent #5,179,956) in view of Fujikawa et al (US Patent #5,101,829).

20. Regarding Claim 4, Harada teaches The pulse wave measuring apparatus according to claim 1, further comprising

a flexible line includes a fixed portion fixed to said protection member (Fig 3, element 84a), a connection portion connected to said substrate (Fig 3, element 84b), and a loose portion located between said fixed portion and said connection portion (Fig 3, element 80). Although Harada does not directly teach a "loose" portion, it does teach an intermediate portion without a resin film that allows it to be "bent easily" (Column 5, lines 60-61) and prevents tensile stress from being produced (Column 6, lines 49-50), which makes it analogous to applicant's invention.

Harada fails to teach a circuit board processing a signal, and a flexible line transmitting a signal output from said pressure sensor to said circuit board. However, Harada does teach a flexible line transmitting a signal output from a pressure sensor to a substrate (Harada, Fig 3, elements 76, 80, and 78). Fujikawa teaches the substrate as a semiconductor, for converting a pressure pulse wave transmitted into an electric signal (Fujikawa, Abstract). It would have been obvious to one of ordinary skill in the art to modify Harada with the signal processing circuit board and flexible line of Fujikawa to increase device efficiency.

21. Regarding Claim 6, Harada and Fujikawa teaches the pulse wave measuring apparatus according to claim 1, further comprising a circuit board processing a signal, and a flexible line transmitting a signal output from said pressure sensor to said circuit board, wherein

said flexible line includes a fixed portion fixed to said protection member and a connection portion connected to said substrate, and

a portion having rigidity different from that of another portion of said flexible line is located between said fixed portion and said connection portion of said flexible line (Harada, Column 5, lines 60-64, intermediate portion of the flat cable ... free from the resin film). Since the intermediate portion is free from the resin film, it has a different rigidity from that of the other portions.

22. Regarding Claim 13, Harada and Fujikawa teaches the pulse wave measuring apparatus according to claim 1, further comprising a circuit board processing a signal, and a flexible line transmitting a signal output from said pressure sensor to said circuit board, wherein

wherein said protection member includes an inner frame body containing said accommodation space and an outer frame body fitted to said inner frame body so as to enclose an outer wall of said inner frame body, and

said flexible line is inserted between said inner frame body and said outer frame body.

23. Regarding Claim 14, Harada and Fujikawa teach the pulse wave measuring apparatus according to claim 13,

wherein said outer frame body has an overhanging portion projecting from an inner surface of said outer frame body and facing, at a distance, a perimeter of an accommodation space forming surface of said inner frame body where said accommodation space is formed (Harada, Fig 3, element 62), and

said flexible line inserted between said inner frame body and said outer frame body is protected by said overhanging portion (Harada, Fig 3, element 80). Although Harada does not explicitly teach that the protection plate is for protecting the flexible wires, it does teach that it protects the conductor pattern and connection terminals, which lie attached or adjacent to the flexible wires (Harada, Column 4, lines 60-62). Thus the overhanging protection plate is perfectly capable of protecting the flexible line as well.

24. Regarding Claim 17, Harada and Fujikawa teaches the pulse wave measuring apparatus according to claim 16, further comprising a circuit board processing a signal, and a flexible line transmitting a signal output from said pressure sensor to said circuit board,

wherein said protection member is electrically connected to the ground potential by said flexible line (Harada, Column 7, lines 25-27, the protection plate is grounded through the grounding terminals of the second connection terminals). The terminals of the second connection connect to the flexible cable (Harada, Fig 3, element 78), and thus the said flexible line grounds the protection member.

25. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al (US Patent #5,179,956) in view of Chesney et al. (US Patent #6,159,166).

26. Regarding Claim 8, Harada fails to teach the pulse wave measuring apparatus according to claim 7, wherein said protection member has a substantially circular outer shape when viewed from direction orthogonal to said main surface of said substrate, and

said attachment mechanism is an O ring.

However, Chesney teaches such a limitation (Chesney, Fig 1C, element 120, view of diaphragm from bottom, and Fig 1A, element 140, o-ring). It would have been obvious to one of ordinary skill in the art to modify Harada with Chesney's O ring to reduce manufacturing costs.

Allowable Subject Matter

27. Claims 5, 9, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

28. Claim 5 is indicated allowable subject matter in that the prior art does not teach a pulse wave measuring apparatus with a flexible line located inside an air chamber.

29. Claim 9 is indicated allowable subject matter in that the prior art does not teach a pulse wave measuring apparatus with a protection member that has a concave fitting portion to an inner portion of a O ring attachment mechanism.

30. Claim 11 is indicated allowable subject matter in that the prior art does not teach a pulse wave measuring apparatus with a protection film that has a collar portion in its peripheral portion.

Conclusion

31. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Karamura et al (US Patent #4,561,447) teaches a pulse wave detector with an air chamber. Eckerle et al (US Patent #5,176,143) teaches a blood pressure monitoring system wherein the flexible lines are enclosed within an air chamber along with protective structure that protrudes and is rounded to protect the flexible lines. Niwa (US Patent #5,238,000) teaches a pulse wave detecting apparatus with a cylindrical casing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Y. Jang whose telephone number is 571-270-3820. The examiner can normally be reached on Mon. - Thurs. (8AM-5PM) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jackson can be reached on 571-272-4697. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. Y. J./
12/5/07

/Gary Jackson/
Supervisory Patent Examiner
Art Unit 4153